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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/671,565 | 09/29/2003 | Yoichi Kodama | 1034232-000025 | 4272 |

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| EXAMINER | |
|---|---|
| HAIDER, SAIRA BANO | |
| ART UNIT | PAPER NUMBER |
| 1796 | |

| NOTIFICATION DATE | DELIVERY MODE |
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| 01/08/2009 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/671,565 | KODAMA ET AL. | |
| | Examiner | Art Unit | |
| | SAIRA HAIDER | 1796 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *10/14/2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,4 and 7-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4 and 7-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, 4 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaya et al. in view of Matsuura et al. (US 5,508,357), Kodama (JP 2003-170528), and Arai et al. (US 6,054,509).

3. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

4. Yamaya discloses thermosetting resin compositions comprising a polyimide and a bismaleimide, wherein the resins exhibit excellent heat resistance properties. Specifically, Yamaya discloses the claimed bismaleimide with the meta-position substitution (Yamaya: Formula (III) col.2, lines 44-69; col. 4, lines 60-61, Table 1 (Examples 9-17)).

5. Yamaya discloses that the polyimide is obtained by reacting a tetracarboxylic dianhydride with a diamine (col. 3, lines 6-34). Wherein suitable examples of the tetracarboxylic dianhydride include the claimed 3,3', 4,4'-biphenyl-tetracarboxylic dianhydride (col. 4, lines 30-36). Yamaya disclose a variety of suitable diamines (such as 1,3-bis(3-aminophenoxy)benzene); however, the reference fails to disclose the claimed diamines (col. 3, lines 34-47). Thus attention is directed towards the Kodama reference, which discusses metallic laminates comprising a polyimide resin coated on a metal foil (abstract). Specifically, Kodama discloses that the polyimide is formed by reacting a tetracarboxylic dianhydride with a diamine [0011, 0017-0019]. Suitable tetracarboxylic dianhydride include the claimed 3,3', 4,4'-biphenyl-tetracarboxylic dianhydride [0021]. Suitable

diamines include the claimed 1,3-bis(3-(3-aminophenoxy) phenoxy)benzene [0023]. Kodama discloses various advantages of the polyimide formed using the claimed compounds, including outstanding low temperature adhesive properties and super soldering heat resistance (abstract). Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the polyimide resin of Kodama for the polyimide of Yamaya in order to form an improved resin composition comprising a polyimide and a bismaleimide.

6. Yamaya fails to disclose that the thermosetting resin composition is present in a laminate composite comprising a metal foil layer and a polyimide layer, as claimed. However, Yamaya discloses that the thermosetting resin compositions are excellent in adhesion, formability, moldability, flexibility and heat resistance. Further, the resin compositions have numerous applications including as adhesives, laminates and molding materials in electrical and electronic equipment and apparatus (col. 6, lines 14-20). Attention is directed towards the Matsuura reference.

7. Matsuura teaches similar polyimide/bismaleimide thermosetting compositions, where the materials are applied to metal foils and as adhesives between polyimide films and metal foils (col. 11 lines 51-62; col. 12 lines 34-63). The articles are formed to provide substrates for flexible printed circuit boards or TAB tapes. It is the examiner's position that it would have been prima facie obvious to apply the polyimide/bismaleimide compositions taught by Yamaya and Kodama to metal foils or between polyimide films and metal foils to form substrates for flexible printed circuit boards or TAB tapes having Yamaya's improved toughness and Kodama's improved heat resistance. The position is supported by the fact that the resin of Yamaya is exemplified as capable of bonding to steel sheets (col. 7, line 31 to col. 8, line 2) and the resin of Kodama is exemplified as capable of bonding to metal foils (abstract).

8. Regarding the limitations drawn to the polyimide, both Yamaya and Kodama teach tetracarboxylic dianhydrides fitting the claimed formulas (1) and (4) (Yamaya at col. 1 line 54-col. 2 line 30; examples; Kodama at [0021]).

9. In reference to the limitation regarding the metal foils, Matsuura discloses copper foil and aluminum foil as suitable metal foils; however, Matsuura fails to disclose the claimed rolled copper foil or electrolytic copper foil as suitable. Thus attention is directed towards the Arai reference, which discloses that the metal foil of flexible printed circuit boards can be selected from a variety of metal foils including electrolytic copper foils, rolled copper foils, and aluminum foils. Wherein the electrolytic and rolled copper foils are most widely employed as metal foils in respect of their good flexibility and high electric conductivity (col. 4, lines 22-33). Therefore, given that the electrolytic copper foils and rolled copper foils are advantageous over aluminum foils, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize either electrolytic copper foils or rolled copper foils as the metal foil in the invention taught by the combination of Yamaya, Kodama, and Matsuura.

10. In reference to the claim 7, Arai discloses that the thickness of the metal foil is usually 18 to 70 μm (col. 4, lines 22-33). It would have been obvious to use the either electrolytic copper foils and rolled copper foils in the thickness specified by Arai in order to fully embody the invention taught by the combination of Yamaya, Kodama, Matsuura, and Arai.

11. In reference to the limitation regarding the metal laminate is used as a based material for a chip-on-film or flexible substrate, the combination of references teaches this limitation. Specifically, the examiner has stated in the rejection above, that it would have been prima facie obvious to apply the polyimide/bismaleimide compositions taught by Yamaya and Kodama invention to metal foils

or between polyimide films and metal foils to form substrates for flexible printed circuit boards or TAB tapes having both Yamaya's and Kodama's improved properties.

12. In reference to the newly added limitation specifying that the metal laminate has a solder heat resistance of 300°C to 360°C, it is noted that since the combination of prior art references teach the identical chemical structures, the properties applicant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Note, that because the references do not expressly teach or address the properties of the claimed invention, it does not mean that the properties are not inherently disclosed. Teaching the same compound(s) inherently discloses the corresponding properties. The references cannot possibly teach or address all of the properties, but implicitly all of the properties are present.

13. Once a reference teaching product appearing to be substantially identical is made the basis of a rejection, and the examiner presents evidence or reasoning tending to show inherency, as done above, the burden shifts to the applicant to show an unobvious difference. "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on 'inherency' under 35 U.S.C. 102, on '*prima facie* obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald,* 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best,* 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

## ***Response to Arguments***

14. The examiner has thoroughly considered the newly added limitations and has presented a *prima facie* case of obviousness.

15. Applicant has stated that the claimed invention has substantial advantages over a resin lacking the claimed diamine and the claimed bismaleimide. In response, the examiner has presented a rational showing that the claimed combination would have been obvious given the teaching, suggestion or motivation provided in the references themselves.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAIRA HAIDER whose telephone number is (571)272-3553. The examiner can normally be reached on Monday-Friday from 10am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Saira Haider
Examiner
Art Unit 1796

/James J. Seidleck/

Supervisory Patent Examiner, Art Unit 1796